

## Closed loop launch and creep control for automatic clutch.

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### Abstract

An automatic clutch controller 60 for a vehicle that reduces the oscillatory response to clutch engagement. The automatic clutch controller receives inputs from an engine speed sensor 13 and a transmission input speed sensor 31 and develops a clutch actuation signal controlling a clutch actuator 27 between disengaged to fully engaged. The clutch actuator at least partially engages the friction clutch 20 in a manner to cause the measured transmission input speed to asymptotically approach a reference speed employing an approximate inverse model of this oscillatory response. In a launch mode, corresponding to normal start of the vehicle, the reference speed is the measured engine speed. In a creep mode, corresponding to slow speed creeping of the vehicle, the reference speed is a creep speed reference based on the throttle setting and the engine speed. The two modes are selected based upon the throttle setting. The automatic clutch controller preferably includes an integral error function and a differential engine speed function, which together adaptively adjust clutch engagement corresponding to vehicle loading. The automatic clutch controller includes a prefilter 68 and a compensator 70 constructed to reduce the need for detailed

particularization for individual vehicles or vehicle models. 

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